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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/909,927	07/20/2001	Kenneth Perlin	NYU-7	2411

7590

06/28/2006

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EXAMINER

NGUYEN, KEVIN M

ART UNIT PAPER NUMBER

2629

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/909,927	Applicant(s) PERLIN ET AL.	
	Examiner Kevin M. Nguyen	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant amended specification filed 04/20/2006, which has been entered.
2. Response to Applicant's arguments, see pages 9-14, filed 04/20/2006, with respect to the rejection(s) of claim(s) 1-11 under the statutory basis for the previous rejection have been fully considered and are not persuasive. Therefore, the rejection has been maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamagishi (US 6,049,424) in view of Wiseman et al (US 5,825,337) hereinafter Wiseman.

4. As to claims 1 and 7, Hamagishi teaches 3D display device associated with a method, the 3D display device comprising:

a display screen upon which stripes of the image appear in at least three distinct phases [3D images, col. 12, line 53, are displayed on the LCD screen 20, fig. 11, col. 12, lines 33-34, three images composes strips of three red, green, and blue columns of pixels, see fig. 11, col. 12, lines 40-42];

it is noted that a first embodiment, fig. 10, and a second embodiment, fig. 18, and a third embodiment, figs. 20, 21, and 25, are equivalent;

a light blocking shutter (a light shutter 40, fig. 18, a shading barrier 10, fig. 10) disposed in front of the display screen (a display screen 20, figs. 10 and 18) forming a stripe pattern during each of the at least three distinct phases [each of the first and second data output periods α and β is composed of three images composes strips of three red, green, and blue columns of pixels, see fig. 11, col. 12, lines 40-42];

a computer (a shading barrier control circuit unit 115, fig. 10) connected to the display screen (a LCD panel 20, fig. 10) and the light blocking shutter (a shading barrier 10, fig. 10) which changes the phases so in each the strip pattern is shifted laterally (see fig. 17) [the shading barrier control circuit unit 115, see fig. 10, carries out such control that the liquid crystal shutter 31, see fig. 18, is turned off and the liquid crystal shutter 32, see fig. 18, is turned on, col. 12, lines 27-30], which renders 2 3D scenes corresponding to the eyes of the observer for arbitrary observer position and orientation, which produces a proper left/right orientation pattern for each of the three phases and which interleaves the left/right orientations into three successive time phases as red, green and blue, respectively [when the viewer 2 is in the normal view position, therefore light from the pixels in even column which are first pixels, that is, the pixels for left eyes images L is incident on the left eye 2L of the viewer 2, and light from the pixels in odd columns which are second pixels, that is, the pixels for right eye image R is incident on the right eye 2R of the viewer 2. Therefore, the viewer 2 can view good 3D images in the normal viewing state, see col. 12, lines 47-54. Each of the first and second data

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output periods α and β is composed of three images composes strips of three red, green, and blue columns of pixels, see fig. 11, col. 12, lines 40-42]; and continually changes the width and positions of the strips as the observer moves [the third embodiment is for enlarging the range in which 3D image can be viewed with respect to forward or backward movement and leftward or rightward movement of a viewer, see figs. 20 and 21, col. 16, lines 9-12];

and an eye tracker (a sensor 101, see fig. 25) for identifying the locations of the observers' eyes and providing the location to the computer [the right eye 2R and the left eye 2L of a viewer 2, col. 7, lines 46-47, are tracking and outputting the sensitive signals from the sensor 101 for sensing the position of the viewer 2 is fed to the position sensing control circuit unit 102 that senses whether the head of the viewer 2 is in a normal view position or a reversed view position by the output of the sensor 101, see figs. 10 and 25, col. 10, lines 18-23].

Accordingly, Hamagishi teaches all of the claimed limitations except for "only 1/3 of each stripe of the image on the display screen during each of at least three distinct phases as red, green and blue."

However, Wiseman teaches 3D display device (see the title) including 1/3 of each stripe of the image on the display screen during each of at least three distinct phase as red, green and blue [each of these regions 13 can be switched between one of a number of colors red, green, and blue, see col. 5, lines 24-26; Light from the image source 5 passes through an image lens 5 and an aperture 7 in a shutter 8. The shutter 8 comprises an array of independently activated the apertures 7, see fig. 2, col. 4, lines

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27-31]. Thus, the light passes only one (1) of the number of colors red, green, and blue (3) or 1/3 of each stripe of each of at least three distinct phases as red, green and blue as claimed.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to implement Wiseman's the light passes only one (1) of the number of colors red, green, and blue (3) corresponding to 1/3 of each stripe of each of at least three distinct phases as red, green and blue in Hamagishi's 3D display device in order to achieve the benefit of provide a viewer with collimated light to improve the autostereoscopic effect of the display (see Wiseman, col. 3, lines 34-36).

5. Claims 2-5, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamagishi in view of Wiseman as applied to claims 1 and 7 above, and further in view of Sullivan (US 6,377,229).

The combination of Hamagishi and Wiseman teach all of the claimed limitations, except wherein the display screen includes a rear projection, the computer includes a field programmable gate array to perform encoding into three bit-maps, and the ferroelectric liquid crystal.

As to claim 2, Sullivan teaches an apparatus has described in claim 1 wherein the display screen includes a rear projection screen [a rear projection screen 20, see fig. 1].

As to claim 3, Sullivan teaches an apparatus as described in claim 2 wherein the display screen includes a field programmable gate array in communication with the projection screen and the shutter which synchronizes the phases between the shutter

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and the projection screen [the graphics data source 16 may optically be a graphics application program of a computer which operates an application program interface and a device driver for providing the 3D image data in an appropriate format to the a multi-planar volumetric display (MVD) controller 18 of the computer through an input/output device such as an interface 14, see col. 5, lines 29-34].

As to claim 4, Sullivan teaches an apparatus as described in claim 3 wherein the display screen [the liquid crystal display 36-42, col. 6, lines 49-50] includes a digital light processor projector [the MVD controller 18, fig. 1] in communication with the array and the projection screen [the liquid crystal display 36-42] which displays the three phases of images sequentially and controls the timing of the phases [the MVD controller 18 synchronizes the switching of the optical element 36-42 (LCD), col. 10, lines 33-34, has enough time during the delay to generate the respective images 82-88 from the sets of frame data 1-4 respectively, see col. 10, lines 44-46].

As to claim 5, Sullivan teaches an apparatus as described in claim 4 wherein the display screen includes a ferroelectric liquid crystal in communication with the array, the light processor, and the projection screen which shutters the start and stop of each phase [referring to Figs. 12-14, the orientations of the principle axes of the half waveplate formed by the pixels 126 of the ferroelectric liquid crystal (FLC) 124 are shown at 0V, 2.5V, and 5V, respectively, to have a 0°, a 45°, and a 90° polarization, respectively, see col. 14, lines 48-51].

As to claims 8 and 9, Sullivan teaches a method as described in claim 7 wherein the forming step includes the step of encoding into 3 1-dimensional bit-maps the three

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phases of stripe for the light shutter, each indicating an on-off pattern for shutter micro-stripes at one of the three phases; and sending these bit-maps to a field programmable gate array of the display screen [the graphics data source 16 and the MVD controller 18 may also perform zero-run encoding through the interface 14 in order to maximize the rate of transfer image data to the MVD controller 18 for image generation the file format such as the Motion Picture Experts Group (MPEG) data or the bit-maps, see col. 6, lines 4-10]. Thus, the MPEG corresponds to the 1-dimensional bit-maps and the bit patterns as claimed. Therefore, the combination of Hamagishi, Wiseman, and Sullivan teach three 1-dimensional bit-maps/three bit-patterns the three phases of strip of the light shutter as claimed.

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to implement the rear projection, the computer performs the encoder the bit-maps, and the ferroelectric liquid crystal as taught by Sullivan in the combination of Hamagishi and Wiseman in order to achieve the benefit of the anti-aliasing adjusts the display of voxels in the transition between optical, and generate a smooth transition between portions of the volumetric three-dimensional image (see Sullivan, col. 3, lines 52-57).

6. Claims 6, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view Hamagishi in view of Wiseman in view of Sullivan as applied to claims 1 and 7 above, and further in view of Johnson et al (US 5,231,521) hereinafter Johnson.

The combination of Hamagishi and Wiseman and Sullivan teach all of the claimed limitations except for the shutter comprising the pi-cell.

However, Johnson teaches the liquid crystal display (LCD)/shutter including the pi-cells ($\Gamma_1, \Gamma_2, \dots, \Gamma_n$), see fig. 2, which orient such that the optic axes of the elements form angles ($\Theta_1, \Theta_2, \dots, \Theta_n$) with respect to the input polarization, see fig. 1, col. 9, lines 44-47 .

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to implement the pi-cells which orient such that the optic axes of the elements form angles with respect to the input polarization as taught by Johnson in the combination of Hamagishi and Wiseman and Sullivan's LCD in order to achieve the benefit of be optimized for increased spectral discrimination, improved single and multiple stage filters, discretely tunable and continuously tunable filters (see Johnson, col. 4, line 65).

Response to Arguments

7. Applicant's arguments filed 04/20/2006 have been fully considered but they are not persuasive.

8. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, examiner provides the motivation at each end of the combination of two references.

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9. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

10. Applicant argues "Hamagishi does not teach the use of multiple cameras, for each camera to form its own image to be shown at predetermined times to a viewer, but instead teaches to use two different selected states to be displayed at various times to a viewer, but instead teach to use two different selected states to be displayed at various times to a viewer. The state has nothing to do with separate cameras. Furthermore, Wiseman teaches to use color filter to create the red, green, and blue. Hamagishi has nothing at all to do and does not teach the need for a color filter," see remarks at pages 12 and 13. In response, examiner respectfully disagrees. As stated *infra* with respect to claims 1 and 7, applicant's argument is nothing to be related with the claimed invention, e.g., "multiple cameras...detect two different selected states to be displayed at various times to a viewer...color filter." Therefore, applicant's argument is not moot.

11. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., multiple cameras, and color filter) are not recited in the rejected claim(s). Although

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the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

12. In response to applicant's argument that indicates in paragraph 10 above, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

13. Applicant argues that dependent claims 2-6 and 8-11 with the emphasis of the recitation in the independent claims 1 and 7 (see remarks at pages 13 and 14). In response, the examiner respectfully submits that the applicant argues only base on the independent claims; therefore, the arguments are not moot. As alleged in greater details above, and office action mailed 11/15/2005 with respect to independent claims 1 and 7, the combined teaching of Hamagishi and Wiseman meets all that limitation with respect to independent claims 1 and 7.

14. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

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15. Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

16. Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

For these reasons, the rejection based on Hamagishi and Wiseman has been maintained.

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEVIN M. NGUYEN whose telephone number is 571-272-7697. The examiner can normally be reached on MON-THU from 8:00-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, a supervisor RICHARD A. HJERPE can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the Patent Application Information Retrieval system, see <http://portal.uspto.gov/external/portal/pair>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMN
June 23, 2006

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